Amendments to the Specification:

Please replace the paragraph beginning on page 6, line 27, with the following amended paragraph:

The inventors have discovered that tissue-specific and species-specific differences in glycosylation pattern of the hZP3 protein, and more particularly the role of residues 308 through 348 ~~349~~, greatly affect the biological activity of this protein. From this discovery, the inventors have developed a cell expression system that uses the ovarian glycosylation machinery to properly glycosylate hZP3. The inventors also have developed glycopolypeptides that bind human sperm. "Properly glycosylate," in this context means to give a glycosylation pattern that is similar to that of the human oocyte (is "human-functional") such that the glycopolypeptide has biological activity (i.e. specific binding to oocyte) with human sperm. Using the present system, the inventors have isolated rhZP3 for the first time that, unlike previous rhZP3, is fully biologically active and contains carbohydrate that more closely resembles human oocyte protein compared to previously known rhZP3. The inventors also have developed a test using the biologically active recombinant glycopolypeptide to diagnose causes of male infertility. Furthermore, the inventors have discovered therapeutic uses of rhZP3 and rhZP3 glycopolypeptides smaller than rhZP3 that have not been realized before.

Please replace the paragraph beginning on page 7, line 10, with the following amended paragraph:

Based on their understanding of the role of hZP3 residues 308 through 348 ~~349~~ in specifying human oocyte glycosylation, the inventors have discovered alternative biologically functional glycopolypeptides that simulate binding of human oocyte to human sperm. The term "biologically functional glycopolypeptide" in this context means a polypeptide that comprises at least the segment of amino acids having the sequence SEQ ID NO: 2 and which binds to human sperm better than to mouse sperm. Preferably the polypeptide further comprises carbohydrate that has been added by a human cell during polypeptide synthesis. More preferably the human cell is from an ovary or follicle cell line. In one embodiment the cell line is a non-ovarian

mammalian (and preferably human) cell line that has been genetically altered for the induction and/or simulation of oocyte glycosylation enzymes. In this context, large scale production of small glycopolypeptides of less than 200 amino acids having sequence identity of more than 54% and preferably more than 75% with SEQ ID NO: 2 allows new uses such as, for example, contraception, whereby the glycopolypeptide interferes with normal fertilization.

Please replace the paragraph beginning on page 19, line 27, with the following amended paragraph:

DNA sequence analysis of hZP3 cDNA revealed that the hZP3 cDNA sequence is identical to that published by Chamberlin and Dean, *Proc. Nat. Acad. Sci. U.S.A.* 87: 6014-6018 (1990). To determine whether the hZP3 cDNA could be translated into a full length recombinant hZP3, in vitro translation was carried out (Promega, Madison, WI). SDS PAGE Analysis of products from the in vitro translation revealed that hZP3 cDNA produced only a 47kd ~~48kb~~ protein. This 47kd ~~47kb~~ was determined to represent the full length form of recombinant hZP3.

Amendments to the Sequence Listing

Please replace the paper copy of the Sequence Listing with the enclosed substitute sheets. A substitute computer readable form (3½-inch diskette) is also enclosed. The information recorded in computer readable form on the diskette is identical to the written Sequence Listing in accordance with 37 C.F.R. §1.821(f).